Appl. No. 10/525,562
Amdt. dated March 8, 2010
Reply to Office action of October 21, 2009
Reply to Notice of Non-Compliant Amendment dated February 22, 2010

AMENDMENTS TO THE CLAIMS

Please amend the claims without prejudice. The following listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1-138 (Canceled)

139.   (Previously presented) A fiber optic flow sensor adapted to be disposed in a wellbore, comprising:

a fiber optic line carrying an optical signal;

a spinner adapted to spin when in contact with fluids flowing through the wellbore; and

a modulator functionally connected to the spinner, the modulator modulating the optical signal depending on the spinning of the spinner.

140.   (Previously presented) The sensor of claim 139, wherein the modulator is located on the spinner and the spinner and modulator are constructed so that the modulator becomes aligned with the fiber optic line once every revolution of the spinner.

141.   (Currently Amended) The system of claim 140, wherein a pulse is reflected through the fiber optic line each time the modulator becomes aligned with the fiber optic line; and an acquisition unit receives the reflected pulse and determines the velocity of the ~~wellbore~~ fluids flowing through the wellbore based on the frequency of reception of the reflected pulses.

142.   (Previously presented) The sensor of claim 140, wherein the spinner includes a blade coupled to a disc.

143.   (Currently amended) The sensor of claim 142, wherein the blade is located external to ~~the~~ a housing of the spinner, and the disc is located internal to the housing.

144.   (Previously presented) The sensor of claim 143, wherein the housing is sealed.

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145.   (Currently Amended) The sensor of claim ~~142,~~ 143, wherein the blade and the disc are magnetically coupled across the housing.

146.   (Previously presented) The sensor of claim 142, wherein the modulator is located on the disc.

147.   (Previously presented) The sensor of claim 146, wherein the modulator is located at a side of the disc.

148.   (Previously presented) The sensor of claim 139, wherein the optical signal is modulated by imparting a strain on the fiber optic line.

149.   (Previously presented) The sensor of claim 148, wherein the modulator comprises a fiber-bragg grating incorporated on the fiber optic line.

150.   (Previously presented) The sensor of claim 148, further comprising:
a permanent magnet coupled to the spinner;
a coil attached to a housing; and
wherein the permanent magnet and the coil become magnetically connected as the spinner revolves.

151.   (Previously presented) The sensor of claim 150, wherein the magnetic connection generates a voltage that causes a piezoelectric material mechanically coupled to the fiber optic line to constrict and strain the fiber optic line.

152.   (Currently Amended) A method to calculate the flow of ~~fluid~~ fluids within a wellbore, comprising:
providing a spinner adapted to spin when in contact with fluids flowing through the wellbore;
and modulating an optical signal transmitted through a fiber optic line depending on the spinning of the spinner wherein said ~~modulation~~ modulating step comprises aligning a modulator with the fiber optic line once every revolution of the spinner.

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153.   (Currently Amended) The method of claim 152, further comprising determining the

velocity of the ~~wellbore~~ fluids <u>flowing through the wellbore</u> based on the frequency of

modulations.

154.   (Currently Amended) A method to calculate the flow of ~~fluid~~ <u>fluids</u> within a wellbore,

comprising:

    providing a spinner adapted to spin when in contact with fluids flowing through the

        wellbore;

    and modulating an optical signal transmitted through a fiber optic line depending on the

        spinning of the spinner wherein said ~~modulation~~ <u>modulating</u> step comprises

        imparting a strain on the fiber optic line.

155.   (Previously presented) The method of claim 154, wherein the imparting step comprises:

    creating a magnetic connection related to the revolution of the spinner; and

    generating a voltage that causes a piezoelectric material mechanically coupled to the fiber

        optic line to constrict and strain the fiber optic line.

156-175   (Canceled)